

Notice of Allowability

Application No.

10/673,433

Examiner

Giovanna Colan

Applicant(s)

GAO ET AL.

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment dated 12/07/2007.
2. ☒ The allowed claim(s) is/are 1-6, 8, 10-18, 20-24, 26-30, 32 and 33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date See Continuation Sheet
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


JOHN BREENE
SUPERVISORY PATENT
TECHNOLOGIST

Continuation of Attachment(s) 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 01/30/2004, 01/26/2004.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Ramraj Soundararajan on 12/07/2007.

3. The application has been amended as follows:

In the claim:

Please amend claims 16 and 22 as follows:

16. A computer-based system for estimating query compilation time via reusing a join enumerator in a query optimizer, ~~said system implemented in computer readable program stored in computer memory~~, said system comprising:

(a) said system implemented in computer readable program stored in computer memory;

~~(a)~~ (b) an interface to receive a query;

~~(b)~~ (c) a join enumerator to iterate through possible join pairs for said query, said iteration performed via reusing said join enumerator in said query optimizer;

~~(c)~~ (d) a property identifier to identify, for each join pair, a set of differentiating properties and use said identified set of differentiating properties to calculate number of join plans; and

(d) (e) a compilation time estimator to estimate and output compilation time from said calculated number of join plans for each type of join method, wherein said number of join plans are calculated for any join type selected from a group consisting of: nested loops, sort merge, and hash, said compilation time is estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t .

22. An article of manufacture comprising computer ~~usable~~ storage medium having computer readable program code embodied therein estimating a query compilation time of a query optimizer via reusing an existing join enumerator in said query optimizer, said medium comprising:

- (a) computer readable program code aiding in receiving a query;
- (b) computer readable program code iterating through possible join pairs for said query;
- (c) for each join sequence, computer readable program code identifying a set of differentiating properties and using said identified set of differentiating properties to calculate number of join plans;

(d) computer readable program code estimating compilation time from said calculated number of join plans for each type of join method, said compilation time is estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; and

(e) computer readable program code outputting said estimated compilation time.

REASONS FOR ALLOWANCE

4. The following is an examiner's statement of reasons for allowance:
5. Per the instant office action, claims 1 – 6, 8, 10 – 18, 20 – 24, 26 – 30, and 32 – 33 are considered as allowable subject matter.

Regarding independent claim 1, the prior art of record fails to disclose or suggest the claimed provision of: estimating compilation time from said calculated number of join plans for each type of join method, said compilation time estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; in conjunction with remaining claim provisions is not taught or suggested, or obvious over the prior art of record or that encountered in searching the invention.

Regarding independent claim 11, the prior art of record fails to disclose or suggest the claimed provision of: estimating compilation time from said calculated and outputting number of join plans for each type of join method via a regression model as follows,

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; in conjunction with remaining claim provisions is not taught or suggested, or obvious over the prior art of record or that encountered in searching the invention.

Regarding independent claim 16, the prior art of record fails to disclose or suggest the claimed provision of: a compilation time estimator to estimate and output time from said calculated number of join plans for each type of join method, wherein said number of join plans are calculated for any join type selected from a group consisting of: nested loops, sort merge, and hash, said compilation time is estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; in conjunction with remaining claim provisions is not taught or suggested, or obvious over the prior art of record or that encountered in searching the invention.

Regarding independent claim 22, the prior art of record fails to disclose or suggest the claimed provision of: computer readable program code estimating compilation time from said calculated number of join plans for each type of join method,

wherein said compilation time is estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; in conjunction with remaining claim provisions is not taught or suggested, or obvious over the prior art of record or that encountered in searching the invention.

Regarding independent claim 28, the prior art of record fails to disclose or suggest the claimed provision of: estimating compilation time from said calculated number of join plans for each type of join method via regression model, wherein said compilation time is estimated via running regression of the following model:

$$T = T_{inst} \times \sum (C_t \times P_t)$$

wherein T is a machine-dependent parameter representing time per instruction, C_t is a constant representing number of instructions to generate a join plan of type t , and P_t is an estimated number of join plans of type t ; in conjunction with remaining claim provisions is not taught or suggested, or obvious over the prior art of record or that encountered in searching the invention.

Dependent claims 2 – 6, 8 – 10, 12 – 15, 17 – 18, 20 – 21, 23 – 24 26 – 27, 29 – 30, and 32 – 33 are allowable at least for the reasons recited above as including all of the limitations of the allowable independent base claims upon which they depend.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issues fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

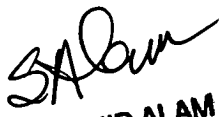
Points Of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna Colan whose telephone number is (571) 272-2752. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Giovanna Colan
Examiner
Art Unit 2162
December 9, 2007


SHAHID ALAM
PRIMARY EXAMINER